

HL7 Working Meeting - Summary Report

Report from the Australian Delegation to the HL7 Working Meeting

San Diego, California, January 18-23, 2004

Background:

Health Level 7 is a multinational health information standards development organisation covering among other things standards for inter-system messaging, vocabulary/terminology, Electronic Health Records structure and Clinical Documents. Australia has been an active participant and has adopted HL7 approach to messaging in many key areas of health informatics. Various Australians/NZers participated in the recent HL7 plenary and working group meeting. This is the first workgroup meeting for the 2004 cycle.

This report brings together the key issues covered by the Australian participants. This report was edited by Dr Vincent McCauley and in some areas summarises issues and groups comments under broad issue headings (since at times more than one of our delegation attended specific sessions due to the requirement for particular expertise). More detailed reports (from which this report was summarised) are available at the HL7 Australia website (www.HL7.org.au). The full reports have been made available to appropriate Federal and State Departments of Health, HL7 and Standards Australia workgroups.

518 registrants including, 110 International from 27 Affiliates (9 attendees from Australia and 1 from NZ) attended 31 Technical Committees and Special Interest Groups and 17 other meetings. The program and descriptions of the purpose of each group together with the agendas can be found at <http://www.hl7.org/events/sandiego012004/index.asp>

Appointments:

Klaus Veil continues on the HL7 USA Board.

Sam Heard continues to serve as Co-chair EHR special interest group, Peter MacIsaac continues as Co-chair of the Medicines Information Special Interest Group and Grahame Grieve continues as a Co-chair of the Control/Query Technical Committee.

Max Walker was appointed as Co-Chair of the Community Based Health Services special interest group.

International meeting:

The internationalisation of HL7 continues. 70 attendees from 14 countries and 12 Affiliates attended the Sunday meeting. Ireland and Poland have become new affiliates with France about to join.

Kai Heitman from Germany takes over from Klaus Veil as Chairman based on his appointment as the HL7 Director representing International Affiliates following the retirement of Australia's Klaus Veil. There was a restructuring of the committee with agreement on appointing a co-chair. Klaus Veil has taken the role in the interim.

An international V3 early adopters group is being established. Future meetings are: 5th International Affiliates Meeting to be held in Cancun (Mexico) or Vancouver (Canada). There will be a full working group meeting in Amsterdam, May 2005.

An ebXML repository is being established for CEN and HL7 concepts. The repository is to be used in the harmonisation of GPICs and CMETs. Profiles giving a synopsis for each affiliate are to be made available at the HL7.org website with links to home sites where they exist.

SNOMED licencing and distribution arrangements were discussed with ongoing consideration of uptake outside of the US.

Klaus Veil - HL7 Board & Patient Admin (Full Report)

Reflecting the activity in HL7 messaging in Australia I participated in the following HL7.org Committees, Technical Committees and Special Interest Groups:

- International Committee (as interim Co-chair)
- Technical Steering Committee (as PA Co-chair)
- HL7.org Board (as full Board member)
- Patient Administration TC (as Co-chair)
- Publications Committee (as Co-chair)
- Process Improvement Committee

Outcomes of Meeting

HL7 V2.5

V2.5 has been published and is being distributed.

HL7 V2.6

The next V2.x release is progressing well with some Australian inclusions to expand tables and improving consistency of implementations in Australia. It will be closed off in May 2004.

Version 3

Balloting and ballot resolution continues, with at least another 3 ballot cycles expected. A number of trial implementations are in progress in the UK, The Netherlands, Japan, etc

International Committee

The group of HL7 Affiliates has been further enhanced with Poland being admitted as a new Affiliate. The momentum in France to establish an Affiliate is growing.

The HL7.org Board has a broader international representation with now three non-US members:

International Affiliates representative: Kai Heitmann - HL7 Germany (KV served the max. 2 terms)

Full board members: Jane Curry - HL7 Canada; Klaus Veil - HL7 Australia

The International Committee met on Sunday from 9:00 to 5:00 with over 60 attendees. The main agenda items worked on were:

- ISO TC215 report (Woody Beeler)
- Version 3 progress report (Woody Beeler)
- Reports from International Liaisons to various technical committees and SIGS were received.
- Reports from the International Affiliates were also received.
- The expansion of the International Committee leadership to co-chairs is progressing and the election procedures were discussed and agreed on.
- The Int. Committee Chairs lunch on the Thursday progresses issues that surfaced during the Working Meeting.

Technical Steering Committee Meeting

The Technical Steering Committee consists of all TC and SIG co-chairs; it met on Monday night from 5:30 onwards.

The main issues handled were:

- CDA V2 passed the 2nd Committee Ballot; Full Membership Ballot expected to follow
- A number of V3 artefacts became normative after passing the Full Membership Ballot: XML ITS, UML Data types, Shared Messages and regulated studies - ECG.
- The TSC approved the formation of a Laboratory SIG.
- A new voting policy for non-members i.e. as used for the EHR ballot was approved
- The next 7th V3 Ballot was approved.

HL7.org Board Meeting

I attended the HL7.org Board meeting on Tuesday evening 3:30pm to 11:00pm(!)

The main issues handled were:

- The HIMSS Interoperability Demo, collaboration between HL7 and IHE ("Integrating the Healthcare Enterprise") is promising to be an excellent event.
- A V3 Implementation Committee Mission & Charter was approved.

Patient Administration Technical Committee

- I chaired the session to review and include new content into V2.6. All new proposals were processed and V2.6 will be closed at the next meeting in May 2004. V2.6 includes a number of Australian initiatives, including Discharge/Referral message enhancements and additional table values.
- The majority of the work was on V3; while progress is being made, there are still substantial gaps in the useability of the V3 patient administration section.

Publications Committee

I co-chaired the V2.x publication session. A draft publication schedule was developed which see V2.6 published in late 2005 or early 2006. While there are no major other outcomes to report, a smooth publication process is vital to the successful distribution and useability of the V2.x standard.

Process Improvement Committee

This Board-appointed committee focuses on the processes within the HL7 Working Group. Again, I found the discussions interesting and relevant to the management of the technical standards development and consensus processes in Australia.

A major work item completed is the creation of formal Decision-Making Procedures for each Technical Committee (TC) and Special Interest Group (SIG). These will become the default for all committee meetings from the next Working Meeting in May onward, unless specific TCs and SIGs decide to adopt alternate procedures.

Evaluation of Benefits and Difficulties of Continued Participation

As stated in previous Meeting Reports, participation at the HL7 Working Meetings requires hard work and long hours. It is one of the most productive activities of the Australian HL7 standards effort. It is difficult to over-estimate the focus and the resulting progress that is created at an HL7 Working Meeting. In my view the quality of the experts and the level of motivation at HL7 Working Meetings is outstanding and without parallel. Due to the high level of international awareness and the breadth of standards development domains, many problems that initially appear to be Australia-specific are solved quite quickly with the help of colleagues from other countries. There can

be no doubt that HL7 continues to be leading in the development and delivery of health informatics standards worldwide.

With more Australians in leadership positions at HL7, Australia has again increased its substantial influence in HL7.org, which allows us to effect changes that are important to Australian users and stakeholders. This influence is a direct result of our continued and committed participation in the development of the HL7 standards.

Recommendations and Actions

- The participation of a substantial and competent team of Australian experts in the HL7.org Standards work results in our influence on the HL7 Standards. As the HL7 standards development model is based on participation, rather than representation, this is the only way to influence and adapt the HL7 Standards to the needs of Australian HL7 users and stakeholders. As repeatedly reported in previous Trip Reports, other countries such as The Netherlands, Germany, etc are sending more than 10 delegates, with the United Kingdom sending 27 delegates to this Meeting! To continue our influence, it is recommended that this level of Australia expert participation be maintained for the duration of the current health informatics agendas.

Richard Harding - Version 3 (Full Report)

Change in an organisation of volunteers who meet three times per year (HL7) occurs slowly. Nevertheless, there are some significant changes underway.

1. The HL7 board has convened an “Organisational Review Committee” to analyse a myriad of issues that impact on the effectiveness and efficiency of the organisation to develop standards. I was a significant contributor to the development of this committee and am an inaugural member.
2. The next ballot of V3 will be published in an entirely new sequence. This was my initiative. It will produce a more coherent document that is more conducive to being printed.
3. Largely at my insistence, tools will be produced **before the next Ballot cycle** to allow WYSIWYG editing of descriptive content in the V3 repository and a tool will be developed that will allow very simple entry of descriptive content.
4. It is widely accepted that there are significant issues with the V3 Acknowledgement paradigm. These issues may be as simple as lack of adequate documentation or may require some reassessment of the underlying mechanism. This was the result of extensive lobbying by a small group including R Harding.
5. A discussion paper on a revised dynamic model is being developed by Lloyd McKenzie. This is to be reviewed by Virginia Lorenzi and R Harding and then circulated for wider comment.
6. V2.5 has been published but the guidelines for upgrades to V2.6 were very restrictive for the type of issues that Australia needs to have resolved. However, following lobbying by Australian representatives, it appears likely all Australian proposals for V2.6 will be considered.

Peter MacIsaac (Vocabulary) (Full Report)

NCVHS report on Patient Medical Record Information Terminologies

The US peak advisory body on health terminology (National Committee on Vital Health Statistics - NCHVS) has recommended the following terminologies and others to make up the standard core for US government health system use:

- SNOMED-CT (diagnosis, procedures and others)
- LOINC (Laboratory only)
- Rx-Norm and components of drug terminologies from the Veterans Affairs and Food and Drug Administration.

Additional recommendations cover integration of terminologies, mapping of the core set to important related terminologies, development of a coordinating entity and linkage with messaging standards. There are 3 key NCVHS reports recently delivered covering EHR vocabulary standards.

Update on SNOMED - CT and terminology implementation in Australia

SNOMED is due to release an update in January 04 and is continuing to explore avenues for internationalisation. The next SNOMED User Group meeting will be held in October 2004. The drug component of SNOMED, while not currently recommended as a US standard, is being updated with considerable input from the UK NHS.

Discussions were held regarding some of the preliminary issues raised by the GP vocabulary project review of SNOMED including the models used for some SNOMED concepts, the relative merit of different approaches to pre and post coordination, the use of terminology to represent context and SNOMED implementation issues. Overall our input was well received and key SNOMED figures presented a genuine interest in implementation issues in countries such as Australia.

I had an opportunity to discuss the Kaiser Permanente implementation of an enterprise wide terminology based on SNOMED-CT. Key features are the use of Kaiser term/concept identifiers, which are mapped to the SNOMED identifiers, use of subsets to create value sets for specific data entry applications and non-use of most of the context dependent axis of SNOMED-CT. They have also prepared an allergy subset, which is available via CAP. Considerable experience in implementation of SNOMED is being developed and would be worth following up further when Australia is considering this option.

Drug and Dose Form Terminology

Further progress was made on the analysis of drug terminology models used in UK/USA/Australia. A report on this is to be expected by the next HL7 meeting.

Peter MacIsaac - Medication

Pharmacy Messages in V3

The current pharmacy ballot was well received, however there were significant major negative ballots which once resolved will require at least one further committee level ballot prior to declaration of Draft Standard for Trial Use status. Requests for expansion of the current V3 message set were considered however the decision was made to finish the current set to completion for next ballot cycle and add in additional messages as time permits. V3 medication messages are to be implemented in the UK, Netherlands and Canada in 2004. An early adopters group is being formed to work with the various technical committees. A project is underway to compare the common V2 messages and segments with V3 to be sure that there is no key information missing. Likewise a workgroup is looking at the mapping of the CEN standard 13606 to HL7 and a closer working relationship between HL7 pharmacy and CEN related work. Gunner Klein, head of CEN TC 251 (health) attended several of the pharmacy group sessions. CEN have ceased independent production of health IT standards and are now collaborating with HL7. The drug dosage instruction stan-

dards paper was revised and is to be circulated to members of the vocabulary and terminology sub-committees.

Medical Certificate Forms (Structured Documents SIG)

I did a presentation to the Structured Documents Technical Committee on our requirements in Australia for a standard way of transporting medical certificates, potentially using the Clinical Document Architecture. **Recommendation: Australia explore the potential for CDA to be the standard for medical forms.**

Integrating Healthcare Enterprise (IHE): new approach to implementation -

IHE is an organisation, sponsored by health user representative groups and supported by vendors, which aims to implement existing standards to tackle current healthcare informatics issues. IHE is concerned with solving key current connectivity problems by agreeing on the integration profile to use multiple standards required to complete complex tasks or workflow.

There are a range of profiles based Radiology, Cardiology, General Information Technology, and Laboratory. Website with details of profiles in radiology, laboratory and infra-structure (described as IT). **IHE appears to be a powerful new force in the health informatics scene and may have direct relevance to dealing with complex user and vendor issues in Australia.**

This year IHE and HL7 have joined forces for the traditional HIMSS demonstration which covers 4 scenarios relating to:

- Bio-terrorism (public health reporting)
- Patient Safety
- Drug trials
- Cancer Registry reporting.

Multiple systems are connected in a virtual electronic healthcare system to follow a patient(s) through various scenarios.

Integrating Healthcare Enterprise (IHE) has identified the longitudinal EHR as a potential subject for profile development in 2004. This is known as the **Cross-enterprise Document System (XDS)**. The EHR model is based on a central or distributed XML document repository, with a document registry managing the query and pointer functions. IHE takes a layered approach to development with this first years proposal covering much of the basic functionality consistent with the basic elements of the HealthConnect systems architecture. In the present proposal the document registry will return a list of documents relating to an individual patient (in a Web-search like format) indicating the source and type of document. The current profile does not have capacity to extract structured information and represent it in various user appropriate views. Documentation on the EHR model will be available in June 2004 and vendor implementations by February 2005.

David Rowed - Referrals & Discharge Summary ([Full Report](#))

At this meeting I presented our requirements for representing clinical data in referral messages, the relevant limitations of V2, and our

V 2.6 proposals to:

- Extend the codes within ORC-1 to represent contexts, moods and tenses (cf Version 3).

- Use the OBR segment as a grouper / health history heading (cf CDA).
- Use Clinical LOINC in the OBR headers, and as a subsidiary header in OBX-3.
- Use OBX in a new way --to allow it to relate segments to each other (cf ActRelationship class of V3).
- Extend the data types within OBX-5 to represent pointers to these segments.
- Extend some segments to include instance identifiers in order to act as targets of these pointers.
- Work to find a 'kludge' solution to instance identifiers for OBX segments without the politics of having to extend this universally-used structure.

Relationship Type

Relationship Instance Identifier

Outbound/Source Segment Instance ID

Inbound/Target Relationship Instance ID

Asserting Entity Instance ID

Assertion Date

Negation Indicator

Certainty

Priority No (relative ordering, workflow: plans etc)

Priority Sequence No (relative preference for consideration)

Separability Indicator.

All this would allow us to take version 2 into a whole new area which is considered the province of V3, but for which V3 has itself not yet been shown to be workable.

We anticipated problems having these accepted on the grounds that they would threaten the uptake of V3. This argument was raised as expected and we countered with:

- (i) Our proposals would smooth the transition to V3;
- (ii) Our stakeholders have been adamant that they require a V2 solution for this type of clinical communication.

After considerable discussion, and in recognition of the importance of this message, we obtained support and a recommendation to go even further with the proposal:

1. To develop a pure relationship segment (although optimal, we had previously dismissed this as unlikely to gain support).
2. To propose this as a Patient Care (our committee) segment on the expectation that approval would then be smoother.
3. To extend all segments (including OBXs) to include
 - a. Instance identifiers,
 - b. Mood codes.

This was more than we had requested and we subsequently worked through it at the Monday night informal Referral subgroup meeting. There we:

- Developed a set of mood codes, which expressed the conditions we had identified and then extended this to include a subset of the V3 mood codes for which we could find use cases.
- Identified the required content and laid out the design of the new Patient Care relationship segment. Its fields were decided to be:

This, together with appropriate data types, would be taken back to IT 14/6/6 for further refinement. IT 14/6/6 would also develop the proposals and formalise the other segment extensions required.

Combined Patient Care TC, Community Based Health SIG, Orders and Observations TC, and Structured Documents TC Meetings to address Clinical Content.

It was agreed that a common approach was required, and that the committees present should undertake the development. All the current HL7 models-in-progress which addressed this were looked at, and it was agreed that the relevant section of the CDA Release 2 specification could be made more generic by removal of the document-specific relationships. This would then form the basis of the common approach and be further developed by the committees.

It was not decided whether the final product would be a specific re-usable RMIM or a set of more general artefacts to be tailored to requirements of the groups.

This is a very positive outcome for us as it addresses the area that we have found most difficult with referral and shared care development, and which has been a major impediment to our acceptance of V3. IT 14/6/6 should support this work and ensure it includes all the content of the Patient Care RMIM.

Public Health Reporting.

Members of the Patient Care TC and Community Based Health SIG held an out-of-session meeting with groups who have expressed interest in using the V2 Referral message, and the clinical content of the V3 Patient Care RMIM (now to be subsumed by the Clinical Statement model) for notifications and public health reporting. We decided that a SIG should be formed for this and that it should also be under sponsorship of Patient Care. This development will progress off-line after the meeting.

Bryn Lewis - Electronic Decision Support & Clinical Guidelines (Full Report)

The first Clinical Decision Support meeting was with EHR, at which the EHR functional specification was presented as being a hierarchy of opportunities for Decision Support (DS) development or DS types. The intention being to clarify what DS intervention is likely to be effective in satisfying particular requirements.

The vMR (Virtual Medical record) is a mechanism for interface to the EHR. The intention being to reduce the complexity as far as is possible, thus, a variety of vMRs, each for a particular purpose, could be defined. Robert Greenes methodology is to use a top down (reduction/convergence of existing models) and bottom up (reverse engineer the requirements of existing DS applications). This is suggested as a way of expediting development of what is not meant to be a complex end product.

The completed GELLO (a language based on the HL7 Reference Information Model - RIM) specification was presented. This specification addresses issues raised at the previous meeting. At present there are no implementations. GELLO is an expression and query language independent of any particular vMR, though dependent on the presence of some vMR. It is a restriction of OCL, with small additions.

The GELLO specification now has built-in basic, collection and tuple data type in addition to recently added ‘.’ (model type) and ‘->’ (collection) operators.

Temporary variables, variable assignment and additional operators have also been added to this specification version.

An evaluation of the specification concluded:

- can express statements
- not clear how to specify patient context
- limitations, can't deal with uncertainty or fuzziness.

There is an implication that terminologies will be the means of determining data values, eg hierarchies of conditions. The values could be pre-coordinated, or post-coordinated with a terminology service.

A joint session with the Patient Safety SIG left the impression that in comparison with CDS, PS appears to be less technical but would probably usefully serve as a means of setting a context for some of the activities in CDS. PS seems to be connecting with a large number of other SIGs.

The Infobutton proposal was presented and didn't raise much controversy. The Infobutton is a PoC application that retrieves context-specific information from content providers using patient data extracted from the electronic medical record. The standard implementation is of a http request with query parameters embedded in the URL. It is an asynchronous request and so has no mechanism to dynamically alter the responses generated. The parameters are being restricted to a simple set.

The next steps for the Infobutton are to develop a glossary, formal data model (class diagram), perhaps terminologies and activity diagrams and will be discussed at a conference call in early March.

Tutorials:

V3 Tools:

A CD of the tools and a set of self-guided tutorials were provided. The explanation and demonstration went from developing a (simple) R-MIM in the HL7 Visio tools (.mdb) through to a browsable version in RoseTree (.hmd) and producing a schema in the XSL Schema generator. The place of MIF was given and it was described in conversation.

OWL:

The Web Ontology Language allows the definition of ontologies (an organisation of concepts for which one can make a rational argument). The intent is to represent knowledge on the web such that its semantics is machine processable. OWL is a W3C standard underpinning the semantic web.

This was a good overview of OWL and how it may be useful. Peter Elkin indicated a willingness to collaborate/provide advice to anyone wishing to work with OWL.

Michael Legg - Pathology Observations and Orders (Full Report)

Laboratory Automation and Point of Care Testing SIG (A SIG reporting to OO TC) – Consideration of the role of the SIG in relation to the new Lab SIG; It was agreed that the SIG should continue at least until current work with IEEE is finished. Its role is to maintain Chapter 13 of v2.x and relevant elements of Chapter 7 and to model to V3 only.

There is no push to use V3 in laboratory automation or PoCT anywhere in the world currently.

ASTM 1394 is still widely in use for analyser interfacing and there is no expectation that it will stop being used. This Standard is now maintained by NCCLS. It is due to be updated but that has not started.

IEEE 1073 defines standards for continuously connected devices with strong real time requirements (eg ECG in intensive care).

HL7 messages are used where data has to be sent to a repository or where testing is done spasmodically. There is activity relating to telemedicine (including at home) and implantable devices.

The ISO Medical Informatics Committee has taken a co-ordination role.

Orders and Observations TC – Review of Lab SIG Charter and committee rules. V2.6 ballot responses (especially Australian ones) were disposed of.

An Australasian proposal (David Rowed and Stephen Chu) around changes to OO segments required for a V2 Referral Message was made. On the basis, that this is/will be a regulatory requirement in Australia it was agreed that a proposal be made that describes the additional fields be added to ORC and OBX segments and a new segment to be defined for the act-relationship required in a referral message. **There is the potential that such a modified message could work both for HealthConnect but also for notification to all registries (especially notifiable diseases).**

A new SIG for Lab has been created for working on V3 messages. Interim Chairs are US and Canada. OO will continue to manage V2 maintenance.

New agenda items include:

- Implantable devices – In particular ICD (Implantable Cardiac Devices). “Programmer” communicates to monitor (patient and device diagnostics eg battery & leads) and set the ICD (device therapy). Physicians want this as part of their EHR environment. Both message and terminology is required for messages between “programmer” and EHR
- Blood product and adverse events related to the supply of these
- Imaging - Reports
- A process for harmonisation of Choice box in RMIMs between Patient Care, CDA and OO for V3.

Karen Gibson - Electronic Health Records (Full Report)

Attendance at this conference was a valuable experience for me and I believe I was able to contribute to the international debate/ understanding of Electronic Health Records as a representative of IT-14-9.

I would recommend other members of the *HealthConnect* Program Office – particularly those from the Design Office – would also find it valuable to attend future working group meetings.

The current approach within Australia for continued use of the V2 standards appears soundly based. However, this approach should be re-visited prior to major future investment.

The HealthConnect Trials and Clinical Information Project are contributing significant intellectual input to the international standards development effort – particularly in the area of Patient Care. The Brisbane Southside Trial has potential to significantly influence current standards debate around the use of templates and archetypes as future technologies to constrain clinical information. Such constraints will be essential if we are to share clinical information, as a common understanding is essential to ensure patient safety.

Presentation of the *HealthConnect* work in a “birds of a feather session” was well received in context of presentations from Israel, Canada and US on ways to cope with national EHR systems.

Sam Heard - Electronic Health Records (Full Report)

I presented the archetype editor and parser to a joint meeting with Structured Documents and EHR SIG. The plan outlined at the Sunday evening meeting (to see HL7, CDA and CEN 13606 interoperate) was presented by Mark Shafarman, to test different approaches to constraint definition. There was broad acceptance of the relevance of the approach and its fundamental contribution to interoperability.

Following a long discussion with Peter Elkin and Gerard Freriks regarding the appropriate approach to dealing with terminology, it was felt that we needed to keep coherence between code phrase expression of information and explicit expression of the same information within archetyped data

structures. There was also recognition of the need to offer 'palettes' or archetypes that provided a consistent and widely used approach to terminology.

At a meeting with Mary Kratz we discussed high bandwidth developments in the health field. She expressed the need to store information specific to telemedicine contacts in the EHR and was interested in the archetypes that might be required to do this.

Joint meeting with EHR SIG and Vocabulary

This meeting was a head-to-head on the appropriate way to deal with terminology within archetypes – Stan Huff and many others were of the opinion that SNOMED terms should be the basis for archetypes – even though their own systems do not base anything on SNOMED!! When we tried to find terms for use in some of the simple archetypes it was very difficult and many were not present. The subsumption hierarchies were not available that suited the use we had in mind. I was approached by the Canadians after the meeting to say that they thought it essential that we did not base archetypes on SNOMED. I found the discussion interesting, and did not find any of the arguments vaguely persuasive, and neither did the members from the EHR SIG. We will be able to move on this with time if it becomes persuasive in the future.

The rest of the meeting was taken up in the refinement and consolidation of the Functional model and standard – this is now available for review and has been discussed at the recent IT14-09/ IT14-09-02 meetings.

Our thanks go to the Commonwealth Department of Health and Ageing and HL7 Australia for supporting our attendance at the Memphis HL7 Working Meeting.

Presentations and meeting minutes of the HL7 TCs and SIGs given can be found at www.HL7.org.